

# Notice of Allowability

Application No.

10/811,980

Examiner

Allen C. Ho

Applicant(s)

HIROKADO, YOSHINOBU

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 18 December 2007.
2. ☒ The allowed claim(s) is/are 3, 10 and 18.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

## DETAILED ACTION

### *Allowable Subject Matter*

1. Claims 3, 10, and 18 are allowed.
2. The following is an examiner's statement of reasons for allowance:

With regard to claim 3, the prior art discloses a cold cathode light emitting device that comprises: a plurality of cathode electrodes; a plurality of insulating layers laminated over the plurality of cathode electrodes; a plurality of gate electrodes provided on the plurality of insulating layers to intersect the plurality of cathode electrodes with the plurality of insulating layers interposed therebetween for extracting electrons from the plurality of cathode electrodes; an anode electrode opposed to the plurality of gate electrodes for emitting light upon receipt of the electrons, with a voltage for accelerating the electrons being applied between the anode electrode and the plurality of cathode electrodes; at least one hole provided at each intersection of the plurality of cathode electrodes and the plurality of gate electrodes extending through the plurality of gate electrodes and the plurality of insulating layers to reach a surface of the plurality of cathode electrodes, the at least one hole having a first diameter at a position where a first of the plurality of insulating layers contact the plurality of cathode electrodes and a second diameter at a position of the plurality of gate electrodes, where the second diameter is greater than the first diameter; and a nanofiber-structure layer provided on the plurality of cathode electrodes in an opening portion corresponding to the first diameter in the at least one hole, wherein the at least one hole is divided into a first section corresponding to a lowermost insulating layer of the plurality of insulating layers being in contact with the plurality of cathode electrodes, a second

section corresponding to the remainder of the plurality of insulating layers located over the lowermost insulating layer, and a third section corresponding to the plurality of gate electrodes; and the first diameter is in the first section. However, the prior art fails to disclose a second section that includes a diameter that decreases to taper toward the plurality of gate electrodes as claimed.

With regard to claim 10, the prior art discloses a cold cathode light emitting device that comprises: a plurality of cathode electrodes; a plurality of insulating layers laminated over the plurality of cathode electrodes; a plurality of gate electrodes provided on the plurality of insulating layers to intersect the plurality of cathode electrodes with the plurality of insulating layers interposed therebetween for extracting electrons from the plurality of cathode electrodes; an anode electrode opposed to the plurality of gate electrodes for emitting light upon receipt of the electrons, with a voltage for accelerating the electrons being applied between the anode electrode and the plurality of cathode electrodes; at least one hole provided at each intersection of the plurality of cathode electrodes and the plurality of gate electrodes extending through the plurality of gate electrodes and the plurality of insulating layers to reach a surface of the plurality of cathode electrodes, the at least one hole having a first diameter at a position where a first of the plurality of insulating layers contact the plurality of cathode electrodes and a second diameter at a position of the plurality of gate electrodes, where the second diameter is greater than the first diameter; and a nanofiber-structure layer provided on the plurality of cathode electrodes in an opening portion corresponding to the first diameter in the at least one hole. However, the prior art fails to disclose the plurality of insulating layers are each formed by firing a paste material made of resin containing glass powder dispersed therein, and a softening point of the glass

powder used for the plurality of insulating layers decreases in the order of getting close to the plurality of gate electrodes as claimed.

With regard to claim 18, the prior art discloses a plurality of first electrodes; a plurality of insulating layers laminated in the plurality of first electrodes; a plurality of second electrodes provided on the plurality of insulating layers to intersect the plurality of first electrodes with the plurality of insulating layers interposed therebetween; and a third electrode opposed to the plurality of second electrodes for emitting light upon receipt of the electrons, with a voltage for accelerating the electrons being applied between the third electrode and the plurality of first electrodes, wherein at least one hole is provided at intersections of the plurality of first electrodes and the plurality of second electrodes to extend through the plurality of second electrodes and the plurality of insulating layers to reach a surface of the plurality of first electrodes, the at least one hole has a first diameter  $d_1$  at a position where the plurality of insulating layers are in contact with the plurality of first electrodes and a second diameter  $d_2$  at a position where the plurality of insulating layers are in contact with the plurality of second electrodes, wherein  $d_2$  is greater than  $d_1$ , a nanofiber-structure layer is provided on the plurality of first electrodes in an opening portion having the first diameter  $d_1$  in the at least one hole. However, the prior art fails to disclose the plurality of insulating layers are each formed by firing a paste material made of resin containing glass powder dispersed therein, and a softening point of the glass powder used for the plurality of insulating layers decreases in the order of getting closer to the plurality of second electrodes as claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen C. Ho/  
Primary Examiner  
Art Unit 2882

07 January 2008